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STATE OF ALASKA

William A. Egan, Governor



ANNUAL REPORT OF PROGRESS, 1969 - 1970

FEDERAL AID IN FISH RESTORATION PROJECT F-9-2

SPORT FISH INVESTIGATIONS OF ALASKA

ALASKA DEPARTMENT OF FISH AND GAME

Wallace H. Noerenberg, Commissioner

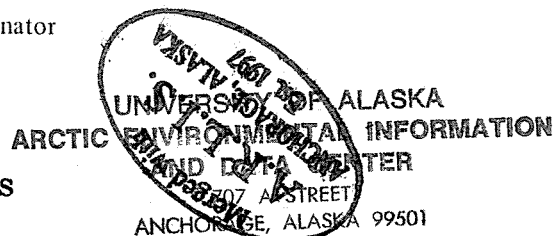
Alaska DIVISION OF SPORT FISH

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INTRODUCTION

This report of progress consists of Job Segment Reports from the State of Alaska, Federal Aid In Fish Restoration, Project F-9-2, "Sport Fish Investigations of Alaska".

The studies reported herein are investigations evaluating the sport fish resources of the state. Recreational and other impacts on the fishery resources necessitates a continuous endeavor of ascertaining facts and knowledge of the fisheries. The 24 jobs reported on are of a continuing nature. The investigations are composed of 11 projects involved with the inventory and cataloging of the sport fish waters of the state, sport fishery creel censuses, and access. Fish species that received special investigational effort include: Dolly Varden, anadromous fish, grayling, sheefish, whitefish, pike, char, and salmon. The information gathered from the combined studies provides necessary background data for a better understanding of management problems and constitutes a basis for necessary future investigations.

The subject matter contained in these reports is incomplete, and the findings and interpretations subject to re-evaluation as work progresses.

RESEARCH PROJECT SEGMENT

State: Alaska

Project No.: F-9-2 *Name:* Sport Fish Investigations of Alaska.

Job No.: 1-D *Title:* Saltwater Sport Fish Harvest Studies in
Southeast Alaska.

Period Covered: July 1, 1969 to June 30, 1970.

ABSTRACT

This report summarizes the Southeast Alaska saltwater sport fishery as censused in the major population centers during 1969. Comparisons are made to competitive fisheries where appropriate.

Weekly aerial counts of fishing sport boats were made on selected days for a determination of the percentage of boats ultimately censused at the moorages. The percentage of days censused throughout the season was also computed to arrive at total catch estimates for each of the respective areas.

Recommendations for shifting creel census effort within the region as needed are submitted.

RECOMMENDATIONS

1. Continue the creel census studies in Juneau and Ketchikan to provide current information on the saltwater salmon sport fisheries and to provide a basis for sound management practice.
2. Give special emphasis to the North Behm Canal area because of apparent decline in population and quality of king salmon fishing.
3. Establish a concentrated creel census of the Grey's Pass king salmon effort.
4. Promulgate no new regulations affecting the saltwater sport fishery.

OBJECTIVES

1. To compile an annual estimate of the numbers and species, by area, of the sport fish harvest of saltwater fishes.
2. To compile indices to size and age groupings with emphasis on salmonoids.

FINDINGS

Juneau Area Saltwater Creel Census, 1969

The Juneau creel census operated continuously from June 2 to August 17. A limiting factor in

determining the time period of censusing was the availability of temporary personnel. Sport fishing effort was observed both before and after the census period. Had censusing started earlier, a greater total king salmon, *Oncorhynchus tshawytscha*, catch would be shown, and a continuation through a later date would have increased the estimated catch of coho salmon, *O. kisutch*.

As in previous years, the census was conducted on all weekend days and four weekdays in each bi-weekly period. July 4 was calculated as a weekend day since atypical effort was expended on the long holiday weekend. Salmon derby days were excluded from the census because of logistics problems arising from the unusual concentration of anglers. Derby results are, therefore, tabulated separately for comparison with previous derbies.

The geographical area censused remained identical to the previous year as shown in Figure 1. Moorages in Juneau, Douglas, Auke Bay, and Tee Harbor were censused with shifting emphasis as the pattern of angling effort changed. Aerial boat counts were conducted to provide an expansion factor basis to estimate totals from data censused from returning anglers at dockside.

Data comparison with that presented in previous years is precluded by the elimination of sport-gear commercial fishing effort from that censused. Presumably, sport-gear commercial catch and effort data from data readout will be forthcoming and discussed in subsequent reports.

Sport fishing census data from recent years is summarized in Table 1. The generally poor weather and relatively small catch of king and coho salmon kept the 1969 effort at a low level, although the number of pleasure boats would lead one to expect increased effort.

TABLE 1 Comparative Creel Census of Sport Fishermen, Juneau, 1964-1969.

Year	Boat Trips	Angler Trips	Angler Hours	Salmon Caught			Total Salmon
				King	Coho	Pink	
1964	1,697	---	---	980	670	55	1,705
1965	1,558	---	---	687	1,029	14	1,744*
1966	1,033	---	---	471	329	43	847*
1967	1,683	---	---	562	400	64	1,042*
1968	1,508	3,902	16,898	629	1,694	301	2,624
1969	1,299	3,114	14,227	450	434	181	1,071*

*1965 - Total salmon includes 9 chum and 5 red salmon.

1966 - Total salmon includes 4 chum salmon.

1967 - Total salmon includes 14 chum salmon.

1969 - Total salmon includes 6 chum salmon.

The validity of "boat trip" as a unit of effort becomes questionable when one considers the effect of weather and success on the length of a boat trip. For instance, a fisherman is likely to spend fewer hours fishing per trip in poor weather, other factors being equal. Also, when fishing is good, trips are likely to be stretched out until darkness falls; thus, the effort will be increased in periods of good fish abundance although the unit of effort will remain the same as long as "boat trips" are used. "Fish per hour" will

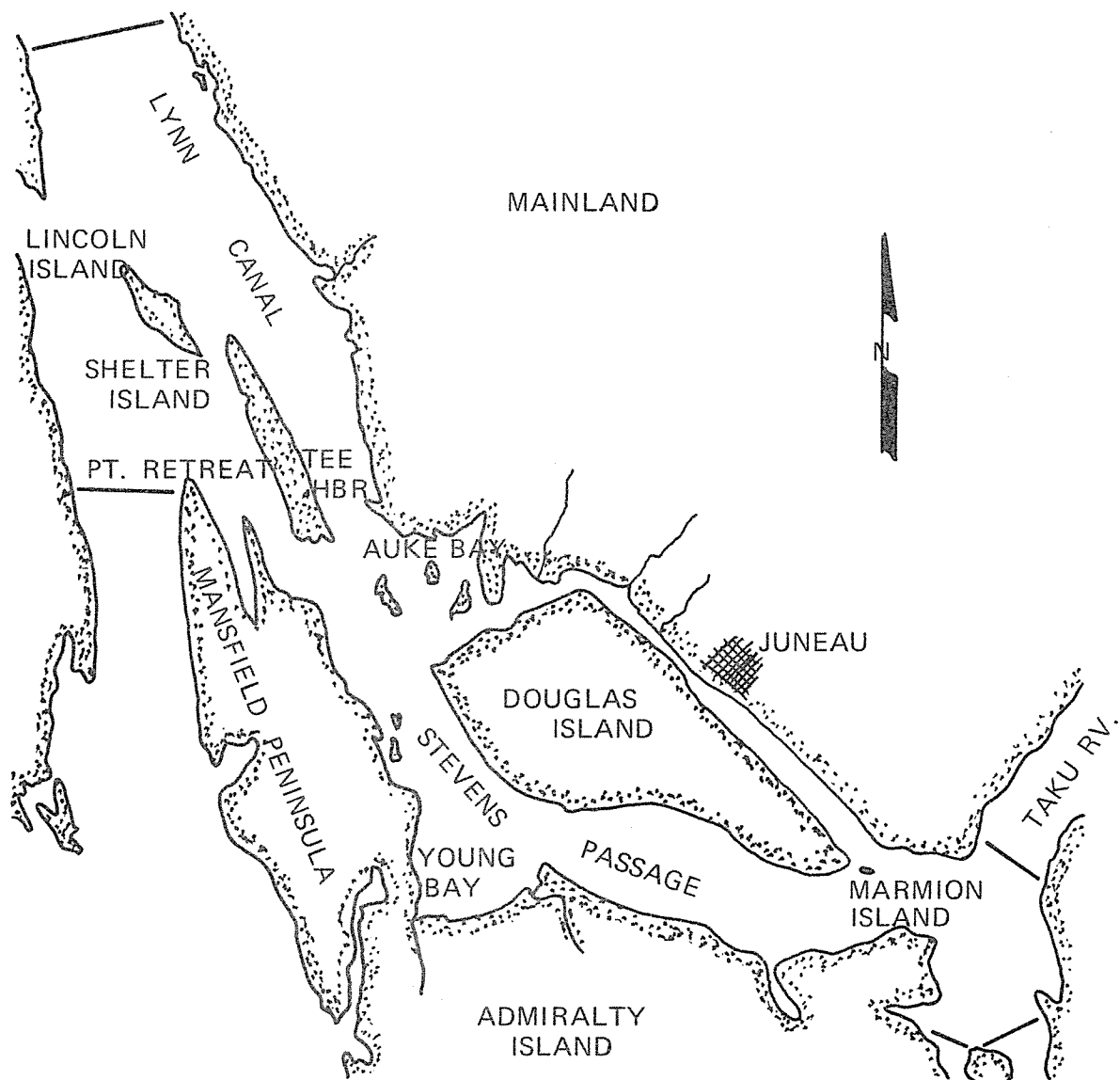


FIGURE 1 Juneau Creel Census Boundaries, 1969.

probably be used as the unit of effort in the future as additional comparative information is gathered.

The pleasure boat size seems to be increasing over the years; that is, a decline in the relative percentage of small skiffs is noticed. There has been an increase in the number of anglers per boat, and an increase in the time length spent per boat trip. The low productivity of sport effort expended on king and coho is also reflected in commercial fishery statistics; the coho run was so poor that there was an early closure of the commercial fishery. Although pink salmon, O. gorbuscha, were not unusually abundant in 1969, they were of a larger size than usual and entered the catch, contributing to the sport fishery more than would be anticipated in an odd year when cyclic pink stocks are expected to be low in the Juneau area. The average sport catch per boat trip of the saltwater salmon fishery is presented in Table 2.

TABLE 2 Average Salmon Catch Per Boat Trip, Juneau, 1964-1969*.

<u>Year</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Total</u>
1964	0.58	0.39	0.03	1.00
1965	0.44	0.66	0.01	1.12
1966	0.46	0.32	0.04	0.82
1967	0.33	0.24	0.04	0.62
1968	0.42	1.12	0.20	1.74
1969	0.35	0.33	0.14	0.82

*Information on salmon catch obtained from Table 1.

The catch of chum, O. keta, and sockeye, O. nerka, salmon by saltwater sport fishermen is either incidental or nonexistent, although some sockeye salmon are taken in a freshwater tributary to Auke Lake. Thus, these species are not tabulated by species, although the "total salmon" column includes sockeye and chum salmon taken in salt water.

Table 3 summarizes the bi-weekly census effort for 1969. The 1,299 boats censused had a total of 1,071 salmon for an average of 0.82 salmon per boat trip in 1969. This compares rather feebly with the 1968 report of a combined total of 2,278 sport and sport-gearred boats which landed 6,991 salmon with an average of 3.07 salmon per boat trip. Presumably the poor success combined with the generally poor weather in 1969 was responsible for the reduced effort. Some of the other census totals are striking when compared to those of 1968. For instance, the coho census of 434 fish in 1969 was smaller than any of the bi-weekly census totals after mid-June in 1968 and was less than nine percent of the 1968 sport and sport-gearred total coho census of 4,853 fish. The 450 kings censused was less than 35% of the 1,290 kings caught by sport and sport-gearred fishermen in 1968. Probably the most significant factor to consider in the relationship of 1969 statistics as compared to other catch years is the elimination of the highly successful sport-gearred commercial fishermen from current catch statistics.

The censused and estimated total sport salmon harvest for Juneau in 1969 is presented in Table 4. The method used for expanding the censused data has been presented by Heckart (1968). It should be stressed

that the expanding factors vary in magnitude between a range of 2.10 and 6.08 by bi-weekly periods, depending on the intensity of fishing effort and of censusing effort. Also, the periodic coverage of weekdays was usually 40% while the coverage of weekends was usually 100%, although there were lapses from this schedule. Some confusion in procedures led to the necessity for estimation of the expansion factor for weekday data in the period encompassing July 4. By taking the arithmetic mean of the expansion factors for the adjacent periods, a factor of 2.90 was arrived at and used in Table 3.

TABLE 3 Sport Fishing Creel Census Summaries by Bi-Weekly Periods, Excluding Salmon Derby, Juneau, 1969.

<u>Bi-Weekly Period</u>	<u>Boat Trips</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Total Salmon</u>
6/ 2 - 6/15	414	968	4,550	152	19	1	1	173
6/16 - 6/29	300	729	3,188	90	51	62	1	204
6/30 - 7/13	187	442	1,965	87	47	56	2	192
7/14 - 7/27	133	330	1,428	37	74	41	1	153
7/28 - 8/10	214	510	2,635	70	207	20	1	298
8/11 - 8/17	51	135	461	14	36	1	0	51
Totals	1,299	3,114	14,227	450	434	181	6	1,071

TABLE 4 Censused and Expanded Salmon Sport Harvest Estimate, Juneau, 1969.

<u>Catch</u>	<u>Boat Trips</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Total Salmon</u>
Censused	1,299	3,114	14,227	450	434	181	6	1,071
Expanded Total	5,378	12,913	56,096	1,759	2,078	793	16	4,646

The superficially disproportionate relationship between censused and estimated total might be viewed skeptically were this variation not borne in mind. In Table 5, the estimated sport catch of salmon in the Juneau area for the past five years is tabulated. Five-year averages are also shown in this table.

The king salmon are observed to provide an average sport catch of 1,855 fish, with a fairly stable harvest varying only about 400 fish, or 22%, from the average during this time period for which the best catch data is available. The 1969 catch of 1,759 was only slightly below this average for king salmon and not at all notable. Similar information for coho salmon take indicates a considerable variation in harvest, as the average of 2,553 fish has been exceeded by 3,321, or 130% of the average. Although the coho salmon harvest of 2,078 fish in 1969 was nearly 500 fish below the average, this was only about a 20% diminution and better than two of the preceding four years, somewhat in contrast to the very low commercial coho fishery in the area. The Juneau sport catch of pink salmon was again outstanding in 1969, as it was in 1968. Although

the number of pink salmon available was less, the size of individual fish was, however, larger and, as observed in the state of Washington, the larger pink salmon seemed to enter the catch in greater number.¹ The catch of 793 pink salmon was nearly twice the average of 403, and is shown for comparison with the preceding five years' catch and average catch for the three species discussed in Figure 2.

TABLE 5 Expanded Sport Catch of Salmon, Juneau, 1965-1969.

<u>Year</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Total</u>
1965	1,635	2,449	33	4,149
1966	2,123	1,266	160	3,469
1967	1,501	1,100	147	2,806
1968	2,256	5,874	884	8,567
1969	1,759	2,078	793	4,646
Average	1,855	2,553	403	4,727

Calculation of the total catch of pink salmon in the sport fishery was initially disappointing and led to some skepticism regarding the accuracy of the expansion of the total from the censused catch, because it was generally felt that the pink salmon contributed much more to the fishery than the statistics indicated for 1969. Further scrutiny of the data and the fishery suggests that the relative importance of pink salmon may depend on the magnitude of the coho run, rather than on the simple gross catch presented in Table 5. This is demonstrated in Figure 3 where the combined catch of pink and coho salmon is used as a basis for comparison of the impact of each species on the total harvest of the two species. Thus, while the 1968 pink harvest was in actual number six times as great as the 1967 harvest, the relative percentage remained virtually identical because of similar variations in the coho salmon catch.

Although the 1969 pink salmon catch was slightly smaller than the 1968 catch, the importance of the 1969 catch was much greater to the fishermen because of the greatly decreased coho catch during the 1969 reporting period. Therefore, the pink salmon did contribute much more to the fishery as was intuitively suspected by observers, so the gross catch figures were misleading, although useful. With additional insight and experience it should be possible to refine this sort of analysis into a useful tool in the future. It is interesting to note that in the state of Washington, the pink salmon sport catch has exceeded 90,000 fish, and that angler acceptance is high in the absence of coho.² Many anglers in the Juneau area release pinks, considering them undesirable as food fish, so a change in angler attitude could result in increased pink harvest. Such a change in attitude would undoubtedly be encouraged by a combination of a poor coho year as in 1966 or 1967 coinciding with a good pink year as in 1968 or 1969.

1969 Juneau Golden North Salmon Derby:

The catch for the annual Golden North Salmon Derby in the Juneau area over the past several years is shown in Table 6.

¹Bill Rees, Washington Department of Fisheries, personal communication.

²Ibid.

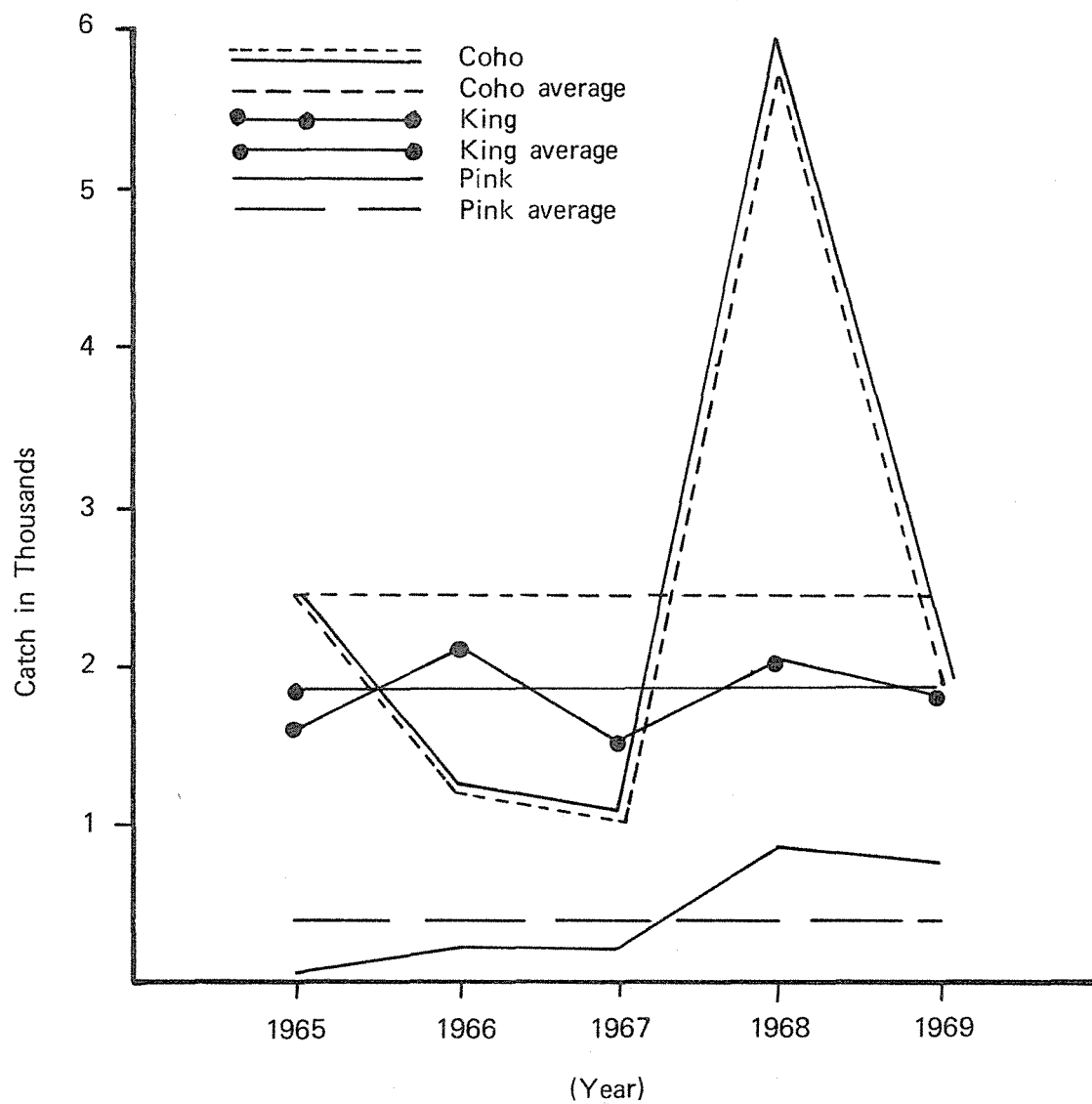


FIGURE 2 Sport Catch of King, Coho, and Pink Salmon, Juneau, 1965-1969.

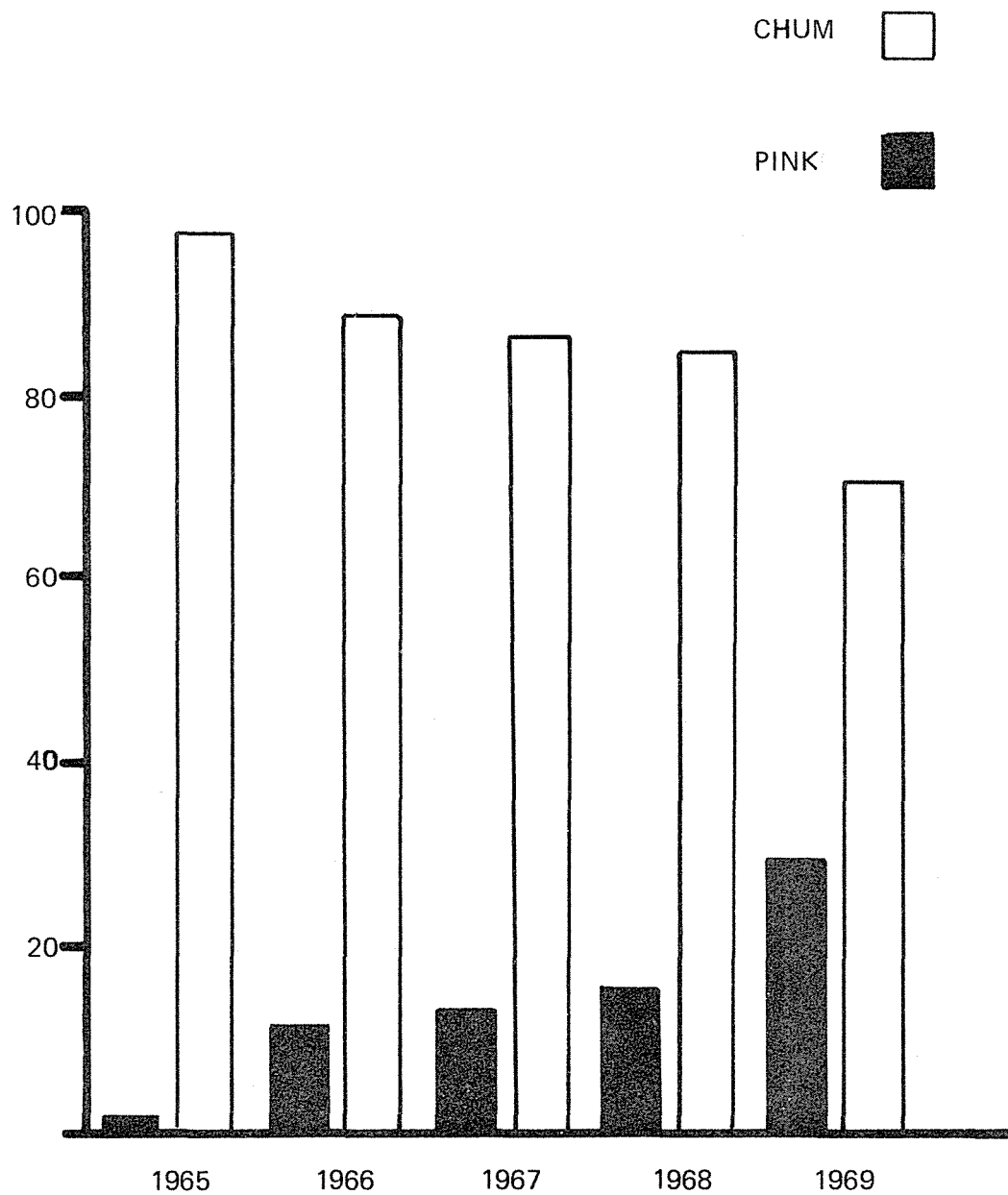


FIGURE 3 PERCENTAGE OF COMBINED COHO AND PINK SALMON CATCH BY SPECIES, JUNEAU, 1965-1969.

TABLE 6 Pounds of Salmon Caught in the Juneau Salmon Derby, 1966-1969.

<u>Year</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Total</u>
1966	12,080	6,953	406	261	19,700
1967	6,506	5,700	636	243	13,085
1968	6,870	15,073	1,682	56	23,681
1969	8,943	10,535	2,654	207	22,339

Lacking effort data, the figures are difficult to interpret, and since the data is presented in pounds rather than in number of fish taken, comparison with sport statistics is precluded. It is interesting to note that the relative take of the various species is not at all proportionate to that shown in the estimated catch totals for the area. For instance, the king salmon catch estimate indicates that more fish were taken in 1968 while the derby reported more pounds of kings in 1969 than in 1968. This seemingly anomolous observation may be attributed to variations in timing of the salmon derby in relationship to timing of the king salmon run.

Miscellaneous Fish Catch, Juneau:

The miscellaneous fish catch including all non-salmon species censused for the Juneau area from 1966 to 1969 is shown in Table 7. Pacific halibut, Hippoglossus stenolepis, continued to be the outstanding contributor in the category. The relative stability of the number of halibut taken in the years tabulated is remarkable, noting both the variation in number of anglers censused, and particularly in the change in census method in 1969 when only sport anglers were censused.

TABLE 7 Miscellaneous Fish Catch Censused, Juneau Area, 1966-1969.

<u>Year</u>	<u>Halibut</u>	<u>Rockfish*</u>	<u>Dolly Varden</u>	<u>Other</u>	<u>Anglers</u>
1966	723	2	34	15	2,798
1967	746	8	125	2	4,715
1968	717	53	205	4	5,022
1969**	648	21	77	5	3,114

*Genus Sebastodes.

**Excludes sport-gearred commercial catch.

The catch of Dolly Varden, Salvelinus malma, in salt water in the Juneau area is poorly portrayed in Table 7, since only those Dolly Varden incidentally taken by boat fishermen are censused for this table. Actually, a much larger number of this species is taken by anglers casting from shore into salt water and fishing specifically for Dolly Varden. Although data on the shore fishery has not been adequately gathered in the past so that a quantitative estimate could be made, such data is now being accumulated under the auspices of the Dolly Varden research program.

The rockfish category of Table 7, included genus Sebastodes, some of which have been recorded as snappers or sea bass in the past. Although they are available in specific locations in the Juneau area, they

are generally scarce and few anglers actively fish for members of this genus. As with halibut, they are probably best considered a buffer species which are sought mostly in the absence of salmon, although a few appreciative anglers do actively fish for rockfish.

The species included under Other, in Table 7, include steelhead, cod, ling cod, and burbot.

Sitka Area Saltwater Creel Census, 1969

Saltwater creel census of the Sitka area continued as in past years, with the geographical location illustrated in Figure 4, and covered the period between June 9 and August 17.

Angler contacts and aerial boat counts were conducted as described in the preceding section of this report relating to the Juneau area, as was the method for expanding census data into an estimated total catch. Sport-gear commercial fishing was not eliminated from the Sitka census presentation.

The Sitka area creel census effort for sport fishermen was compared to that of previous years in Table 8, which also shows the four-year average. The number of boats censused is noted to be considerably less than in previous years, but this cannot be interpreted to be a reflection of fish abundance.

TABLE 8 Comparative Creel Census Effort on Sport Fishermen, Sitka, 1966-1969.

<u>Year</u>	<u>Boat Trips</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Total</u>
1966	240	---	---	92	81	3	176
1967	217	---	---	54	59	16	131*
1968	253	561	2,590	49	55	11	115
1969	183	399	1,686	57	16	17	90
Average	223			63	53	12	128

*Total includes two chum salmon.

When subjected to a casual analysis of sport catch per boat trip in Table 9, it is apparent that king salmon fishing was better than average since 1966, although the coho salmon catch might be described as a dismal failure. Referring again to the discussion of the relationship of pink and coho salmon in the sport fish catch in the Juneau area, it was noted that with poor coho fishing, relatively good pink salmon catches were enjoyed. In contrast to the conditions noted in the Juneau area, however, the Sitka area expects its better pink salmon runs during odd years, so the conditions are not directly comparable. The good pink salmon catch failed to compensate for the poor coho salmon catch, and the average of 0.49 salmon per boat trip fell below the four-year average for the second consecutive year.

Scrutiny of the bi-weekly summaries of sport fish creel censuses in Table 10 suggests that an earlier initiation of censusing would have decreased the catch per unit of effort shown in Table 9, since during the first week high effort was expended with remarkably small success when only four king salmon were taken in 51 boat trips of effort. The point of diminishing returns on censusing effort had been reached during the final period when only one boat trip was censused and no fish were taken.

Aerial boat counts in the Sitka area included commercial fishermen using sport-gear, so it was impossible to expand the censused sport catch to an estimated total sport catch independent of commercial catch. Therefore, the best data available is presented in Table 11, which includes the sport-gear commercial catch.

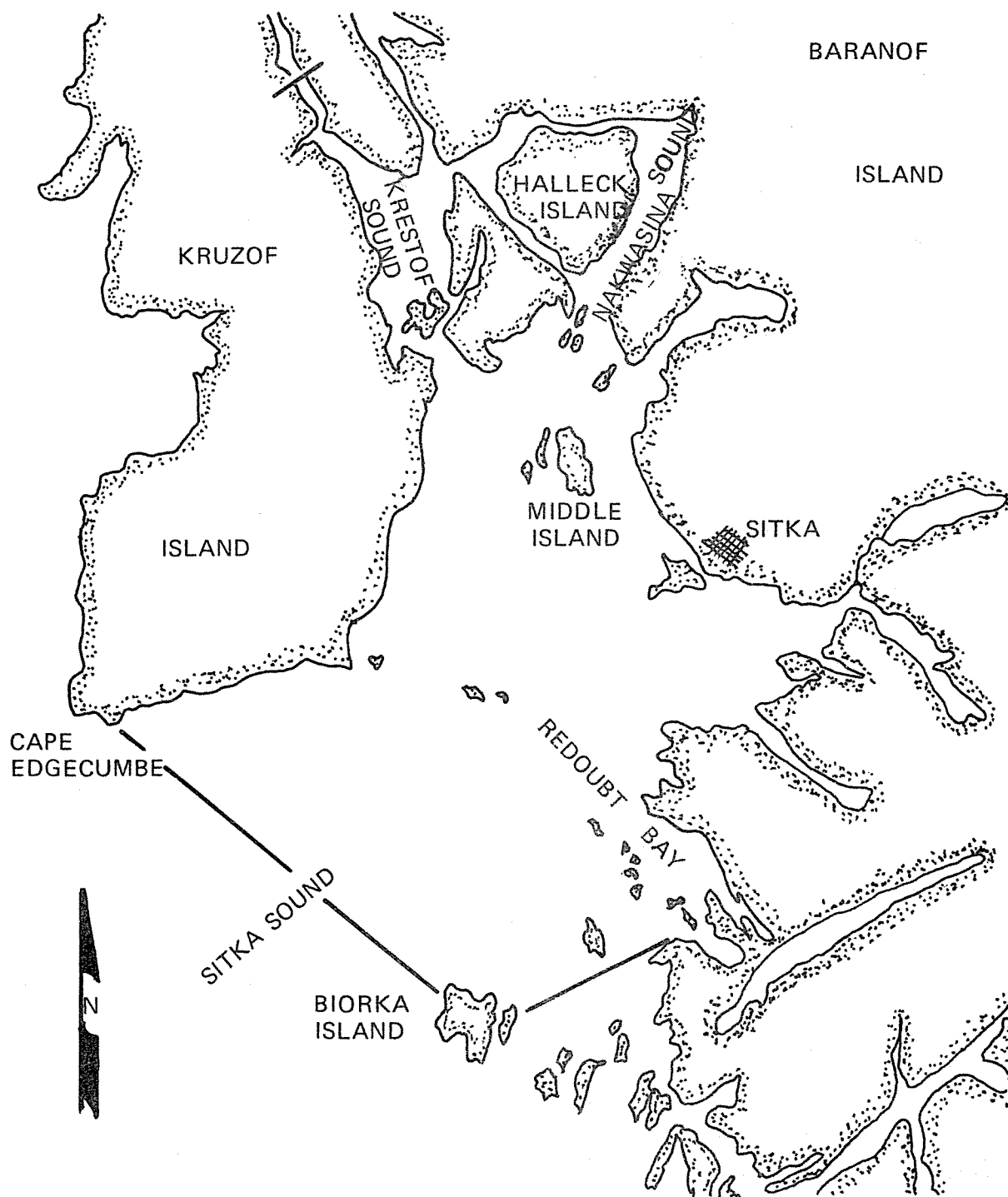


FIGURE 4 SITKA SOUND CREEL CENSUS BOUNDARIES, 1969.

TABLE 9 Average Salmon Sport Catch Per Boat Trip, Sitka, 1966-1969.*

<u>Year</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Total</u>
1966	0.38	0.34	0.01	0.73
1967	0.25	0.27	0.07	0.60
1968	0.19	0.22	0.04	0.46
1969	0.09	0.09	0.09	0.49
Average	0.28	0.24	0.05	0.57

*Information on salmon catch obtained from Table 8.

TABLE 10 Creel Census Summaries by Bi-Weekly Periods, Excluding Salmon Derby Days, Sitka, 1969.

<u>Bi-Weekly Period</u>	<u>Boat Trips</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Total Salmon</u>
6/ 9 - 6/15	51	111	476	4	0	0	4
6/16 - 6/29	26	54	226	9	0	0	9
6/30 - 7/13	31	60	234	18	1	0	19
7/14 - 7/27	43	100	375	15	5	2	22
7/28 - 8/10	31	72	359	11	10	15	36
8/11 - 8/17	1	2	16	0	0	0	0
Totals	183	399	1,686	57	16	17	90

TABLE 11 Censused Sport Catch, Total Censused Catch, and Expanded Total Salmon Harvest Estimate, Excluding Salmon Derby, Sitka, 1969.

	<u>Boat Trips</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Total Salmon</u>
Censused Sport	183	399	1,686	57	16	17	90
Total Censused*	271	566	2,689	93	38	27	158
Estimated Total	1,098	2,276	10,298	397	173	74	644
Estimated Sport**	741	1,602	6,456	243	73	47	363

*Includes sport-gearred commercial fishermen.

**Proportion $\frac{\text{Censused Sport}}{\text{Censused Total}} = \frac{\text{Estimated Sport}}{\text{Estimated Total}} \times X$

A proportion using the relationship of censused sport to censused total was applied to the estimated total to obtain the estimated sport catch for the various parameters summarized in this table. An example of the calculation using boat trips follows:

$$\frac{\text{censused sport boat trips (183)}}{\text{total censused boat trips (271)}} : \frac{\text{estimated sport (?)}}{\text{estimated total (1,098)}} = \frac{183}{271} : \frac{x}{1,098} = 741$$

While this computation may be less than ideal, it is felt that it is acceptably accurate when the limiting factors in the accuracy of data gathered are considered.

In past years the total catch for sport-gear in Sitka Sound has been summarized for comparison purposes. This summarization has been continued and Table 12 shows the comparison for the period from 1965 through 1969 which includes all known salmon harvest by hand-held rod and reel. Examination of this table indicates that the combined harvest of all species was slightly above the five-year average of 1,217 salmon, primarily because of the outstanding king salmon harvest. Although the effort presentation in Table 9 indicates a better than average king salmon run, it does not explain the exceptional catch of kings shown in Table 12 for 1969.

TABLE 12 Total Estimated Sitka Sound Rod-and-Reel Salmon Harvest, 1965-1969.*

<u>Year</u>	<u>Total**</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Red</u>
1965	806	383	217	206	0	0
1966	1,082	582	437	60	3	0
1967	910	380	478	48	4	0
1968	2,007	907	1,004	89	7	0
1969	1,282	961	236	85	0	0
Average	1,217	643	474	98	3	0

*Includes sport, sport-gear commercial, and salmon derby.

**Information for 1969 was obtained from Tables 11 and 13.

The answer to the obvious question regarding the source of the additional kings may be found in Table 13 where the Sitka Salmon Derby catch for recent years is summarized. In this table, the numbers of salmon are estimated from the total weight of each species entered in the derby for the past two years. It is apparent that more king salmon were entered in the derby in 1969 than in any two of the previous years tabulated. Lacking effort data for the derby, it is impossible to meaningfully explain the divergence of catch per unit of effort in Table 9 and the salmon derby catch in Table 13 for 1969. Conjecturally, there must have been increased effort during the derby. The relatively good coho salmon catch for the 1969 derby is particularly difficult to rationalize in view of the abject failure indicated in the effort table.

The Sitka sport catch of king and coho salmon has been estimated with the best data available for the years 1965 through 1969. The sport catch summarized in Table 14 is observed to constitute approximately one percent of the combined sport and commercial king salmon catch for the commercial fish regulatory district (113) in which Sitka is located. The coho salmon sport catch approximates about one-half of one percent of the total reported catch for the same area, which includes the west coasts of Baranof and Chichagof islands.

Table 15 includes the saltwater catch of fish other than salmon censused and allows a comparison of the censused take from 1965 through 1969. Again, lacking effort data and remembering that halibut are

of commercial importance, conclusions regarding fish populations or of angler acceptance are precluded.

TABLE 13 Sitka Salmon Derby Catch, in Numbers of Fish, 1965-1969.

<u>Year</u>	<u>Total Salmon**</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Halibut</u>	<u>Ling Cod</u>
1965	194	155	38	1	60	11
1966	241	188	50	3	78	22
1967	233	214	17	2	94	74
1968*	413	230	181	2	no data	
1969*	638	564	63	11	139	142

*Catch estimated from poundage.

**Information through 1968 was obtained from Table 12. Information for 1969 was estimated from fish ticket poundage.

TABLE 14 Comparison of Sport and Commercial King and Coho Salmon Catch, Sitka area, 1965-1969.

<u>Year</u>	<u>Sport</u>	<u>% of Total</u>	<u>King Commercial</u>	<u>% of Total</u>	<u>Sport</u>	<u>% of Total</u>	<u>Coho Commercial</u>	<u>% of Total</u>
1965	383	0.9	38,120	99.1	217	0.2	188,239	99.8
1966	554	0.8	68,202	99.2	317	0.3	104,631	99.7
1967	361	1.4	24,971	98.6	212	0.5	44,872	99.5
1968	466	0.9	48,889	99.1	457	0.6	80,624	99.4
1969	807	1.3	61,521*	98.7	136	0.3	44,753*	99.7
Average	514	1.1	48,340	98.9	268	0.4	92,624	99.6

*Preliminary Totals

TABLE 15 Miscellaneous Fish Catch Censused*, Sitka, 1965-1969.

<u>Year</u>	<u>Halibut</u>	<u>Rockfish**</u>	<u>Dolly Varden</u>	<u>Ling Cod</u>
1965	49	36	12	5
1966	398	70	2	17
1967	536	57	0	50
1968	86	99	24	10
1969	179	147	94	24
Average	250	82	26	21

*Sport and sport-gearred commercial included.

**Includes Genus Sebastes.

Management Implications of Creel Census Information:

Having determined the magnitude of sport catch and relative impact on the district's population of king and coho salmon, it is apparent that sport fishing has virtually no effect on the abundance of these species with present fish population levels and sport fishing effort.

Fifty-seven king salmon were censused in the Sitka sport fishery in 1969, while the four-year average has been 63 king salmon censused (Table 8). These numbers might be typical of one landing by a commercial troll vessel in Sitka. According to the estimate that one-fourth of the fish taken in the area are of Alaskan origin, probably about 15 of the censused sport kings would have eventually entered Alaskan streams. Most of the kings were taken after the Alaska king salmon had entered their spawning streams and any which were destined to spawn would have to traverse through extensive commercial fisheries and other local sport fisheries. Using the total estimated sport catch for 1969 of 807 king salmon, which is the highest recorded and includes the salmon derby, probably 200 were of Alaskan origin and certainly less than 100 of these would have attempted to spawn in 1969. The futility of attempting to manage king salmon by Sitka sport fishing regulation is obvious.

Generally, the Sitka coho sport fishery is believed to be dependent upon local fish stocks. The diminutive harvest by sport fishermen constitutes less than one percent of the commercial harvest. With one exception, most of the sport fishing has ceased before the coho near their spawning streams where management of the coho sport fishery might be feasible in a year of disastrously poor returns. In such an unusual situation, poor effort statistics from the intercepting commercial fishery should provide adequate warning for any emergency regulation which might be appropriate. In general, the late sport fishery on manageable coho populations is self-regulating with equinox weather being the greatest limiting factor and the advent of hunting season providing competition for the efforts of local outdoorsmen.

The exception to the late timing of the coho run occurs at Port Banks where the fish are available in July. This stream is far enough from Sitka so that relatively little saltwater sport fishing occurs. It is the only stream which has consistently shown coho in the extensive Commercial Fisheries Division stream surveys of the area, and escapements have varied between 500 and 5,000 coho salmon in the period from 1965 through 1969. Barring major changes in fishing pressure or coho population fluctuation, the present regulations are deemed adequate.

Petersburg Area Saltwater Creel Census, 1969

The saltwater creel census program initiated in 1967 and continued in 1968 was again conducted in the Petersburg area during April, May, and June of 1969. The design of the census program was the same as that used in previous years, with the census covering the Petersburg small boat harbor on two randomly selected weekdays and one weekend day each bi-weekly period.

King salmon are present in the Petersburg area throughout the year, but are most numerous during the months of April, May, and June. Significant numbers of halibut are also taken at this time of year while fishing for king salmon. Coho salmon do not enter the Petersburg area until late summer and are normally taken in the freshwater streams entering the Wrangell Narrows.

The fishing areas censused during 1967 and 1968 were expanded somewhat in 1969 to include Wrangell Narrows from Blind Slough north to Beacon Point, and Point Frederick in Frederick Sound, as shown in Figure 5.

On each census day boat counts were conducted either by skiff or by airplane prior to taking creel census at the Petersburg small boat harbor, for a correlation between the number of boats observed fishing and the number censused at the dock. As done in other areas in Southeast Alaska, a number of anglers fished commercially with skiffs and sport gear in the Petersburg area. Of the sport-gear fishermen censused,

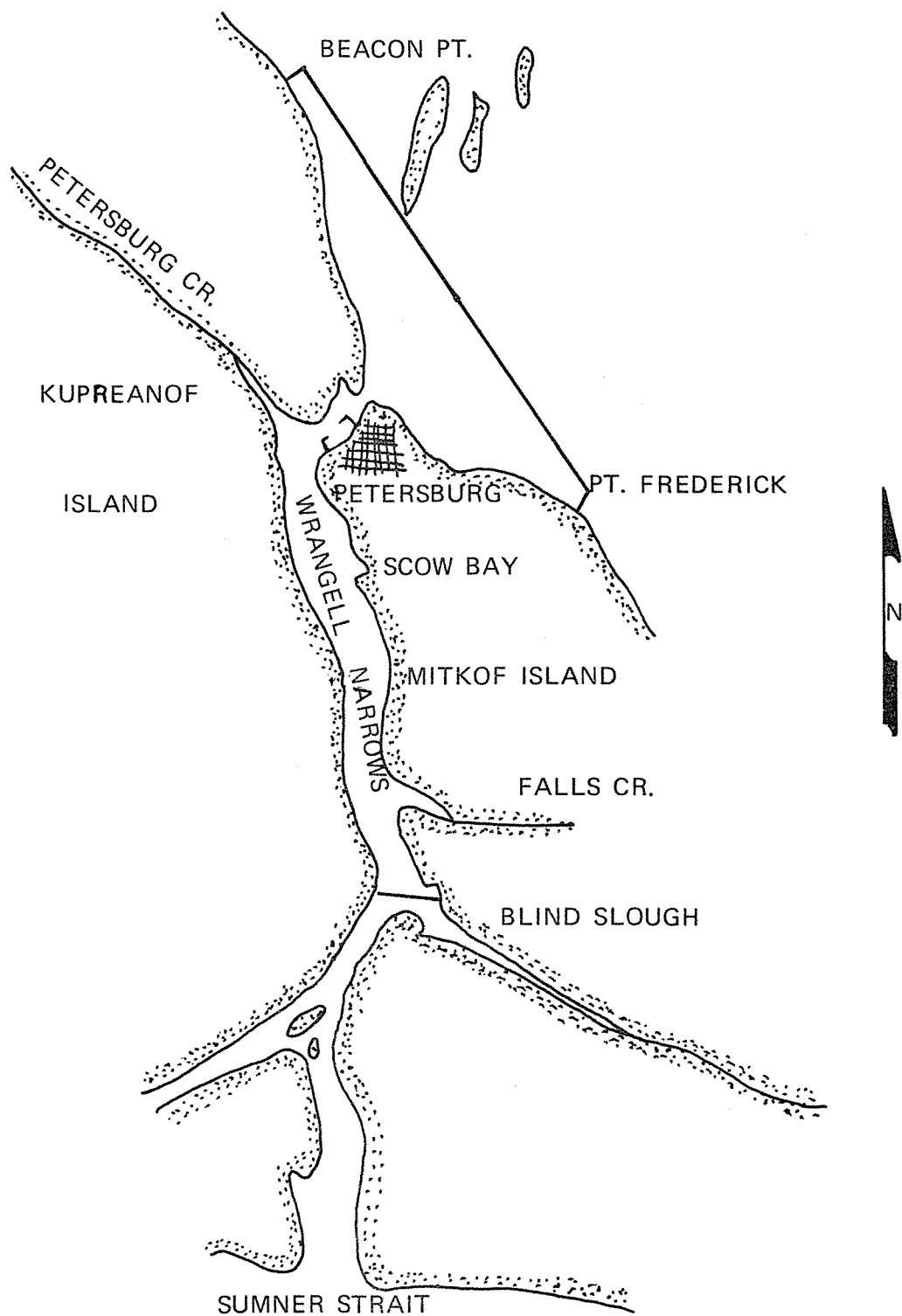


FIGURE 5 PETERSBURG CREEL CENSUS BOUNDARIES, 1969.

43% were selling their catch commercially. This was an increase over 1968 when 35% of the sport-gearred fishermen were fishing commercially. There has been a steady increase in the number and percentage of sport-gearred commercial fishermen in the Petersburg area since the census program was initiated in 1967. This increase may be due in part to the increase in prices paid for troll-caught king salmon. Table 16 shows the comparative catch of king salmon by sport and sport-gearred commercial fishermen for the Petersburg area.

TABLE 16 Total and Comparative Censused Catch of Sport and Sport-Gearred Commercial Fishermen, Petersburg, 1969.

<u>Boat Type</u>	<u>No. of Boats</u>	<u>% of Total Boats</u>	<u>King Salmon</u>	<u>% of Total Kings</u>
Sport	97	57	14	19
Commercial	<u>75</u>	<u>43</u>	<u>63</u>	<u>81</u>
Total	172	100	77	100

During the 84-day census period, 300 fishermen took a total of 77 king salmon and 53 halibut. The average angler fished 4.7 hours for a mean catch of 0.24 king salmon per hour. Halibut, Dolly Varden, and rockfish were the only non-salmon species landed during the census period in the Petersburg area.

Presented in Table 17 are the bi-weekly census summaries for the Petersburg area saltwater king salmon fishery.

TABLE 17 Creel Census Summaries by Bi-Weekly Periods, Petersburg, 1969.

<u>Bi-Weekly Period</u>	<u>Boat Trips</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>King Salmon Censused</u>	<u>Halibut Censused</u>
4/ 7 - 4/20	17	25	93.5	6	5
4/21 - 5/ 4	22	39	170.0	6	12
5/ 5 - 5/18	25	39	190.5	8	5
5/19 - 6/ 1	39	70	347.0	20	14
6/ 2 - 6/15	44	78	395.0	33	4
6/16 - 6/29	<u>25</u>	<u>49</u>	<u>211.5</u>	<u>4</u>	<u>13</u>
Totals	172	300	1,407.5	77	53

The Petersburg area censused catch was expanded in the same manner as described for Juneau, Sitka, and Ketchikan with one exception. The censusing of anglers was conducted on two randomly selected weekdays and only one weekend day. Census programs in the other areas were conducted on two weekdays and both weekend days. The estimated seasonal harvest by bi-weekly periods for the Petersburg area appears in Table 18.

An expanded estimate of the comparative king salmon harvest for the years 1967 through 1969 is presented in Table 19. The numbers of anglers and total king salmon showed a marked increase in 1968 over those recorded in 1967. The 1969 effort was on the same level as 1968, with a slight drop in both number of

anglers and king salmon harvested. Of special interest is the fact that the salmon catch per angler has remained nearly constant since 1967 even though both the number of anglers and the number of king salmon harvested have increased.

TABLE 18 Expanded King Salmon and Halibut Harvest by Bi-Weekly Periods, Petersburg, 1969.

<u>Bi-Weekly Period</u>	<u>Boat Trips</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>King Salmon</u>	<u>Halibut</u>
4/ 7 - 4/20	137	202	757.5	48	42
4/21 - 5/ 4	129	251	1,048.5	32	100
5/ 5 - 5/18	102	158	771.0	31	22
5/19 - 6/ 1	158	282	1,371.0	79	63
6/ 2 - 6/15	156	275	1,342.5	107	16
6/16 - 6/29	66	131	572.5	10	52
Totals	748	1,299	5,863.0	307	295

TABLE 19 Comparative Salmon Harvest and Angler Effort for Years 1967-1969, Petersburg area.

<u>Year</u>	<u>Angler Trips</u>	<u>Estimated Catch</u>	<u>Catch Per Angler Day</u>
1967	417	190	0.29
1968	1,388	337	0.24
1969	1,299	307	0.24

Ketchikan Area Saltwater Creel Census, 1969

Creel census of the Ketchikan area saltwater salmon fishery covered a 98-day period from May 19 to August 24, 1969. The creel census program and schedule of aerial boat counts were conducted as in past years and identical in design to those conducted in the Sitka and Juneau areas. Descriptions of the census program and aerial boat count schedules can be found under the Juneau segment of this report.

The area covered by the census program remained the same as in past years and was bounded by a line just south of Ice House Cove to Tatoosh Rocks on the north, as portrayed in Figure 6.

Presented in Table 20 are the comparative numbers of sport and sport-gear commercial boats which comprised the Ketchikan fishing fleet censused in 1969. The total number of commercial boats was down sharply from 1968. Several factors contributed to the low number of sport-gear commercial fishermen censused in 1969. Most of the commercial boats do not tie up at the floats covered during the census and their catch is not recorded. The overall salmon runs in the Ketchikan area were low in 1969, which caused a lack of sport-gear commercial effort.

The king salmon harvest was up slightly in 1969 from that recorded in 1968. The coho salmon catch

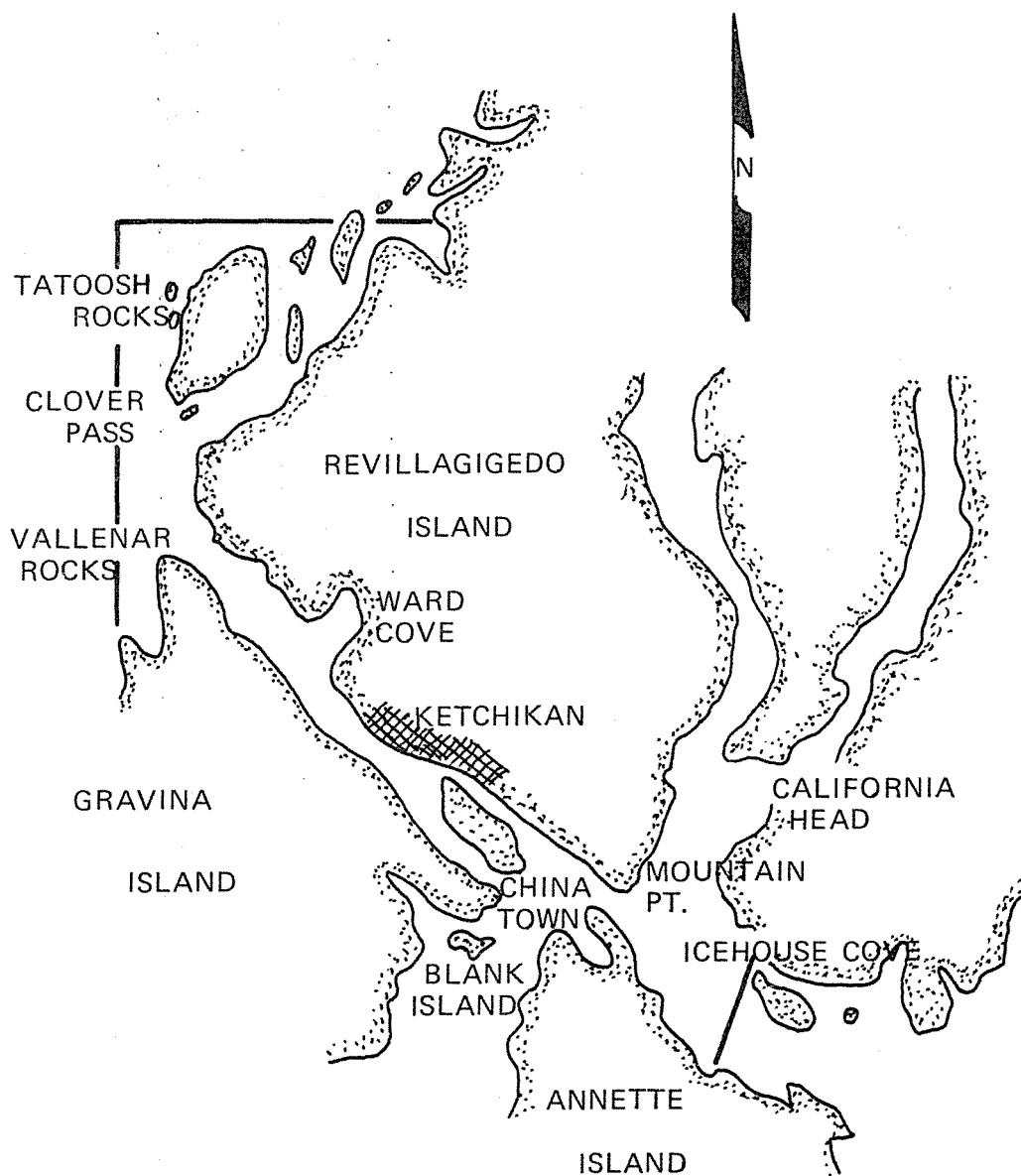


FIGURE 6 KETCHIKAN CREEL CENSUS BOUNDARIES, 1969.

for the Ketchikan area was at an all-time low in 1969. The overall salmon catch was only one-third of that recorded in 1968 which was due to the lack of pink and coho salmon.

TABLE 20 Comparative Numbers of Sport and Sport-Geared Commercial Fishermen Censused, Including Their Respective Catches, Ketchikan, 1969.

	<u>Total Number</u>	<u>% of Total</u>
Total Number of Boat Trips	418	
Sport	414	99
Sport-Geared Commercial	4	1
Total Number of Angler Trips	1,068	
Sport	1,064	99
Sport-Geared Commercial	4	1
Total Number of Angler Hours	7,383	
Sport	7,359	99
Sport-Geared Commercial	24	1
Total Salmon Caught	269	
Sport	259	95
Sport-Geared Commercial	10	5
Total King Salmon Caught	242	
Sport	234	96
Sport-Geared Commercial	8	4
Total Coho Salmon Caught	17	
Sport	14	80
Sport-Geared Commercial	3	20
Total Pink Salmon Caught	10	
Sport	10	100
Sport-Geared Commercial	0	0

The bi-weekly creel census summaries for the Ketchikan area salmon fishery appear in Table 21. The 1,068 angler trips interviewed at dockside during the season fished a total of 7,383 hours to catch 269 salmon of all species. The average angler fished a total of 27.4 hours to catch one salmon. The harvest of 0.25 salmon per angler trip was a sharp decrease from the 0.56 salmon per angler trip recorded in 1968.

The 1969 catch of non-salmon species censused in Ketchikan included 67 halibut, 3 ling cod, Ophiodon elongatus, and 192 rockfish, Sebastes sp. This increase in non-salmon harvest over previous years was attributed to the generally poor salmon fishing.

The saltwater salmon harvest in the Ketchikan area was expanded for an estimated seasonal harvest using the same formula as in the Juneau, Sitka, and Petersburg census programs. Weekday and weekend catches were expanded separately, then totaled for a bi-weekly harvest. The bi-weekly catches were finally totaled for an all-season harvest. Aerial boat counts were made on alternate week and weekend days. The aerial counts indicated that an average of 15.6% of the boats observed on any given census day were actually contacted upon their return to the Ketchikan small boat harbors.

TABLE 21 Creel Census Summaries by Bi-Weekly Periods, Ketchikan, 1969.

<u>Bi-Weekly Period</u>	<u>Boat Trips</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>Salmon Caught</u>			<u>Fish/ Angler Trip</u>	<u>Fish/ Hour</u>
				<u>King</u>	<u>Coho</u>	<u>Pink</u>		
5/19 - 6/ 1	181	445	3,338	110	--	--	0.25	0.03
6/ 2 - 6/15	124	338	2,685	97	--	--	0.29	0.04
6/16 - 6/29	27	77	435	10	1	--	0.14	0.03
6/30 - 7/13	30	78	343	2	2	--	0.05	0.01
7/14 - 7/27	17	39	163	2	1	--	0.08	0.02
7/28 - 8/10	20	46	209	14	3	6	0.50	0.11
8/11 - 8/24	19	44	210	7	10	4	0.48	0.10
Totals	418	1,068	7,383	242	17	10	0.25	0.04

The 1969 expanded total salmon harvest by both sport and sport-gearred commercial fishermen in the Ketchikan area appears in Table 22.

TABLE 22 Censused and Expanded Salmon Harvest, Ketchikan, 1969.

	<u>Boat Trips</u>	<u>Angler Trips</u>	<u>Angler Hours</u>	<u>King</u>	<u>Coho</u>	<u>Pink</u>	<u>Total</u>
Censused Catch	418	1,068	7,383	242	17	10	269
Estimated Catch	4,151	10,378	70,954	2,385	153	147	2,685

Estimated total salmon catches for years 1965 through 1969 are presented in Table 23. The 1969 catch of king salmon was the highest recorded since the census program was initiated in 1965. However, the catch of coho and pink salmon was very poor and the overall total catch was down from 1968.

TABLE 23 Total Estimated Salmon Harvest, Ketchikan, 1965-1969.

<u>Year</u>	<u>King Salmon</u>	<u>Coho Salmon</u>	<u>Pink Salmon</u>	<u>Total Salmon</u>
1965	1,161	236	154	1,562
1966	1,179	457	1,142	2,791
1967	594	86	22	704
1968	1,667	1,303	1,254	4,244
1969	2,385	153	147	2,685

*Total includes chum salmon

The annual Ketchikan "Sweepstakes" salmon derby catch was not censused separately and its catch is included in the season catch data.

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